Flex Integral BC/FC/NTC
Installation of unit, chair and lamp

YA-886, vers. 4.00

Flex

Versionslog

List of versions for YA-886				
Reasons	**Pages to be replaced**	**New version**	**Date**	**Initials**
New edition		4.00	1996-06-18	

Contents

1. Unpacking

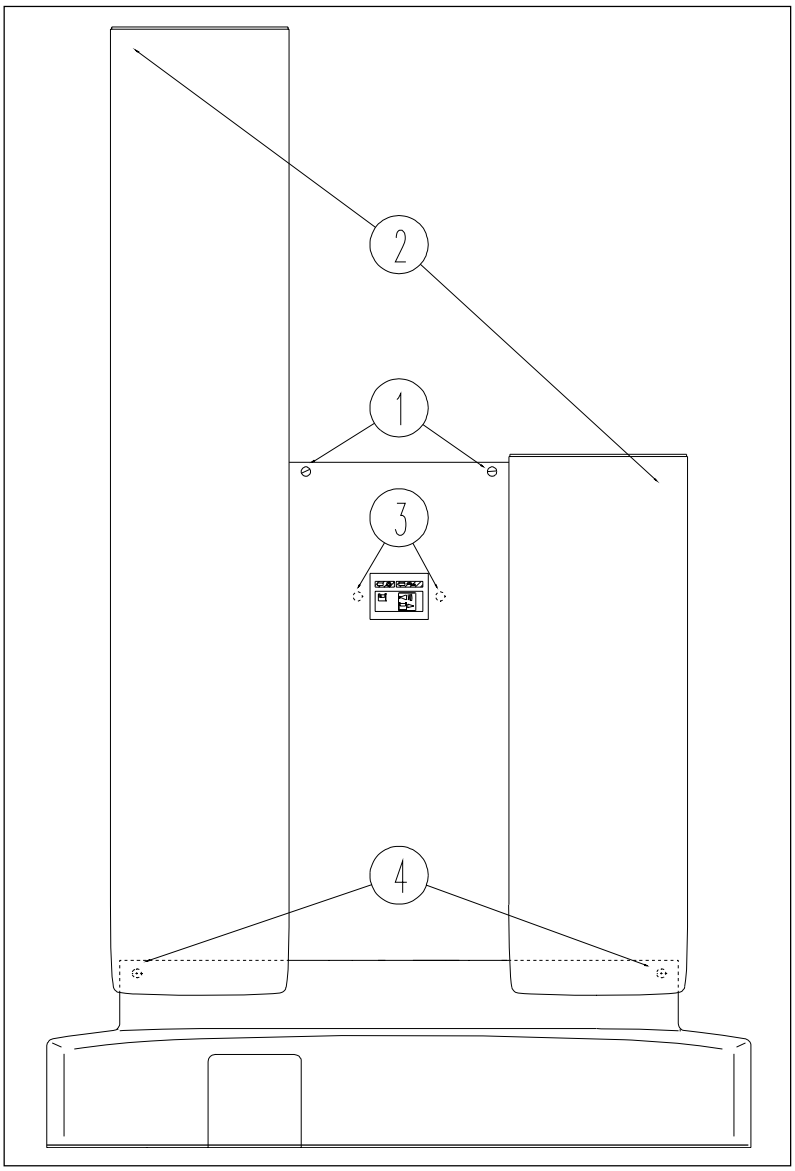


Figure 1. Unpacking the equipment.

1. Unpacking

The equipment is forwarded in four boxes:

* Stand with parts
* Instrument bridge with arm and parts
* Operating lamp with arm
* Patient chair

Keep the box upright while unpacking the unit stand. To avoid damaging the covers, the foam wrapping under the stand must stay in place until the covers have been removed.

See Figure 1.

1) Loosen the lock screws (1) using a coin and twist the cover a little at (2) in order to remove the side covers.

2) Loosen the two thumb screws (3) to remove the amalgam separator display from one of the side covers.
3) Loosen the Phillips screws (4) to remove the foot covers.

2. Installation

2. Installation

Always comply with the requirements of your local authorities, despite any contradictive text in this manual.

Static electricity

Avoid electrostatic discharge!
The equipment must be switched off, and you must be electrically connected with the equipment frame when you touch the electronics.

We recommend using our antistatic service kit (ordering no. AC-188).

In an emergency, you can hold on to the steel frame while working.

 When this symbol is shown, use the antistatic service kit.

Installation requirements

For installation layout, see plans in chapter 5.

1) 230 VAC + 10%, 50 Hz with earth plug. Group fuse 10 A. The cable must have a loose end of no less than 35 cm.
2) Water, pressure 2.5 - 5 bar. Ball tap with 3/8" internal thread. Top 7 cm over the floor.
3) Air, pressure 5.5 - 6 bar. Ball tap with 3/8" internal thread. Top 7 cm over the floor.
4) Drain, Ø 32 mm (externally) PVC tube. Top 7 cm over the floor.
5) Suction, Ø 32 mm (externally) PVC tube. Top 7 cm over the floor.
6) Suction motor control cable, 2 * 0.5 mm^2 (minimum). Loose end of minimum 35 cm.
7) If desired, a cable for call system, 2 conductors, 2 * 0.5 mm^2 (minimum). Alternatively 230 VAC can be connected. Loose end of minimum 35 cm.
8) If desired, a cable for the X-ray apparatus. Loose end of minimum 150 cm.
9) If required, equipotential, 4 mm^2 (minimum). Loose end of no less than 35 cm.

You can also run the cables on the floor. In this case, the pre-stamped knock-out section on the foot cover must be removed.

Unit stand

1) Drill 4 holes in the floor according to the plans/pattern or use the mounting board (ordering no. AC-860).
2) Fasten 2 nuts contra on each attachment bolt and fasten the bolts to the floor/board.
3) Fasten one of the nuts on either bolt loosely to the floor/board.
4) Place a washer on each bolt and mount the stand on them.
5) Place another washer on the bolts and then fasten a nut on each loosely.
6) Adjust the bottom nuts so the spirit level, located where the arm is connected to the stand, is level. (The stand must be as tightly fixed to the floor as possible).
7) Fasten the top nuts.

2. Installation

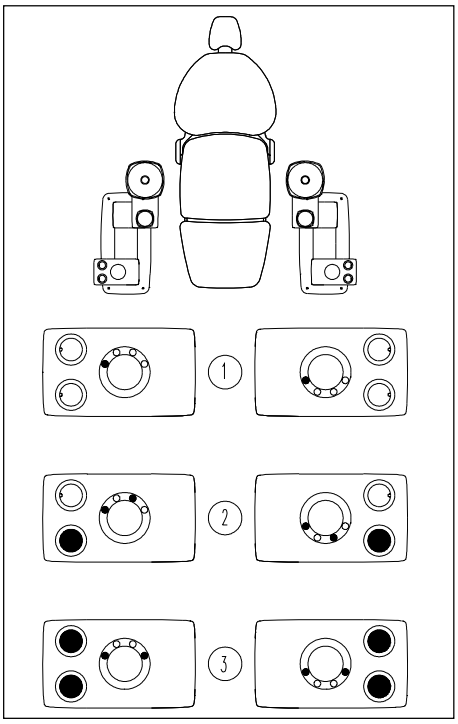


Figure 2. Stop pin positioning for left or right handed units:

1) Nothing mounted = no extra stop pin
2) Lamp
3) Lamp + X-ray apparatus

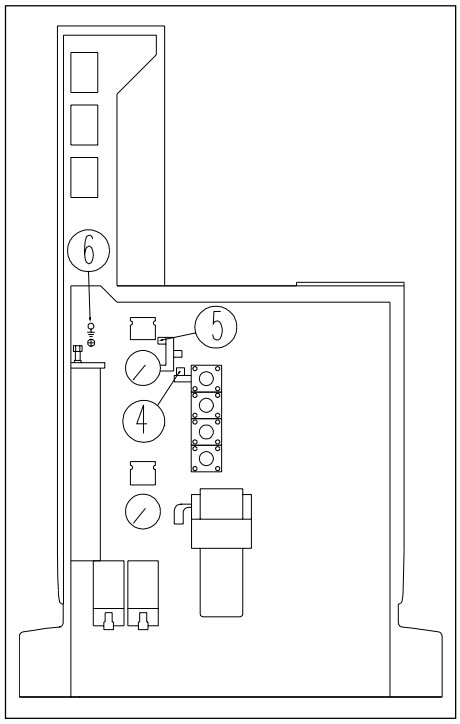


Figure 3. Open unit, seen from mechanical side.

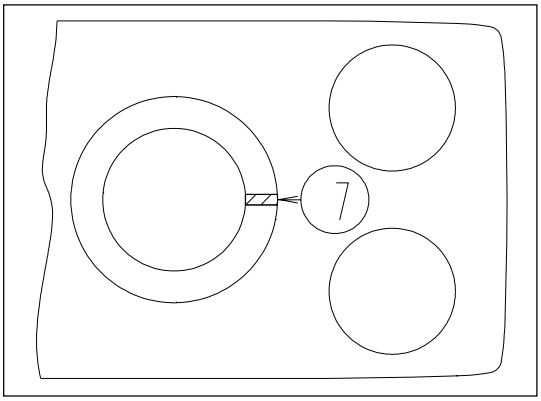


Figure 4. The friction brake of the arm swivel joint is accessible from below.

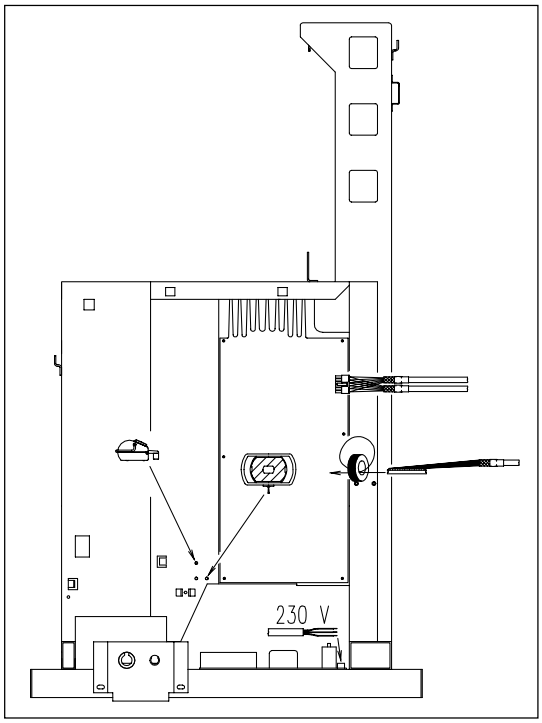


Figure 5. Open unit, seen from PCB side.

Arm and instrument bridge

1) If necessary, place a stop pin in the swivel joint on the stand according to the apparatus load, see Fig. 2. (The supplied extra stop pin is in a plastic bag attached to the arm).
2) Remove the cover under the nose of the stand.
3) Remove the top cover from the back arm.
4) Run the cables and tubes right up to the bearing pivot.
5) Place the supplied teflon washer on the swivel joint surface at the top of the stand.
6) Fold the arm up and mount it.
7) Run the cables through the channel in the stand located on the PCB side.
8) Run the tubes and the earth wire through the channel on the opposite side.
9) Press the green tube on the water manifold (4) and the blue tube on the air filter (5), see Fig. 3.
10) Connect the earth wire (yellow/green) to the stand at (Fig. 3 (6)).

11) Connect the cables to the MAIN CONTROL printed circuit board at JP17 (signal) and JP21 (power). Loop the signal cable around the ferrite ring as shown in Fig. 5. The cable clips must be tightly fastened to their shields.
12) The swivel joint friction brake, located on the arm at the top of the stand (Fig. 4 (7)) is tightened according to the dentist's requirement.

Foot control

1) Run the foot control cable into the stand through the hole (Fig. 5).
2) Fasten the cable. (Run the cable under the bearing bar).

3) Connect the cable to the MAIN CONTROL printed circuit board at JP15. The cable clip must be tightly fastened to the shield.

2. Installation

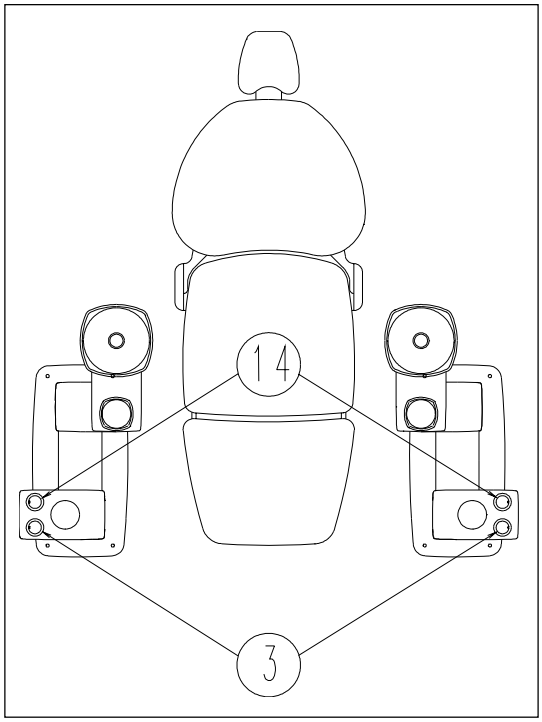


Figure 6. How to place the lamp (3) and the X-ray apparatus (14) on left and right-handed units.

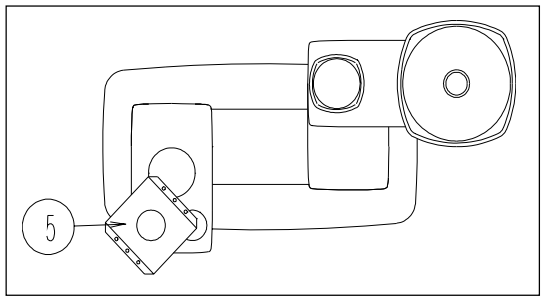


Figure 7. The base board is mounted on the ceiling directly above the stand lamp hole.

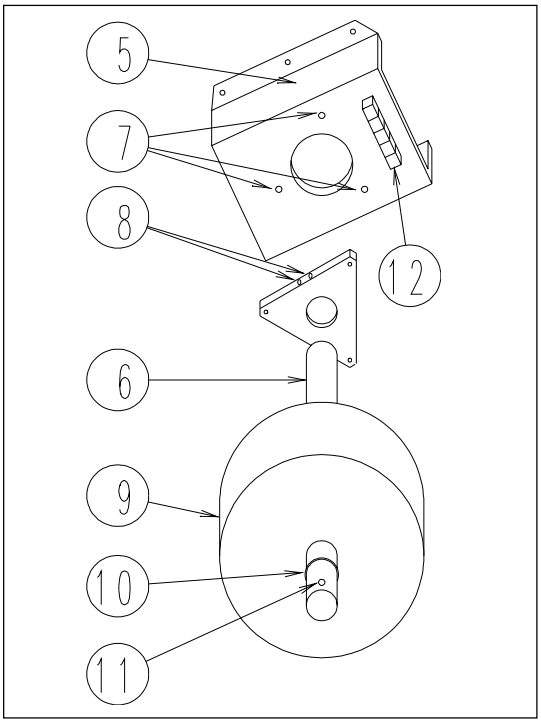


Figure 8. Operating lamp on the ceiling.

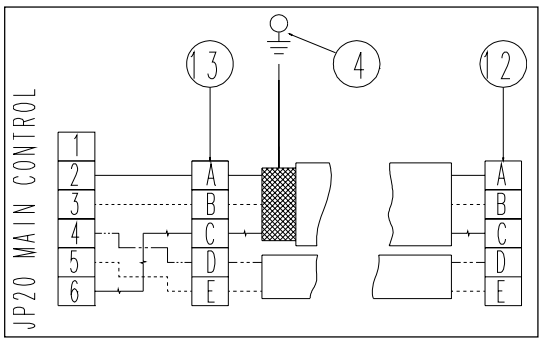


Figure 9. A: white, B: brown, C: grey, D: green, E: yellow.

Operating lamp

Remember to screw the stop screw which is fastened to the top of the lamp into the swivel joint. Remove the small piece of cardboard that protects the intermediate link on the arm during transport.

On the unit

1) Insert the adapter tube with the plastic washer in hole (3) on Fig. 6 and turn the tube clockwise until fastened.
2) Run the lamp cable through the adapter tube and down into the stand.
3) Place the lamp on the adapter tube.
4) Run the cable through the channel which is located on the PCB side.
5) Connect the ring terminal to the stand, see Fig. 5.

6) Connect the cable to the MAIN CONTROL printed circuit board at JP20.
7) If desired, screw a handle on the top of the lamp.

On the ceiling

1) Mount the base board on the ceiling as shown in Fig. 8 (5).
2) Shorten the adapter tube at the end with no pre-drilled holes for lock screws , see Fig. 8 (6) (length = room height - 205 cm).
3) Unscrew the flange from the base board, see Fig. 8 (7).
4) Fasten the tube to the flange so it is level with the side of the flange facing the ceiling, see Fig. 8 (8).
5) Screw the flange to the base board and adjust the flangeso the tube is vertical, see Fig. 8 (7).
6) First fit the protection (9) and then the O-rings (10) on the tube, see Fig. 8.
7) Cut the lamp cable 20 cm from the socket and run the cable through the tube.
8) Screw the back arm of the lamp onto the tube, see Fig. 8 (11).
9) If necessary, shorten the cable and connect the conductors to the terminal strip, see Figs. 8 and 9 (12). The cable shield is not to be connected.
10) Remove insulation on the loose end of the 20 cm cable with socket and connect it to the terminal strip, see Fig. 9 (13).
11) Run 2 cables ((3 * 0.25 mm^2) with shield and (2 * 2.5 mm^2)) from the ceiling to the stand.
12) Connect the 2 cables to the terminal strips as shown.
13) Connect the ring terminal to the stand, see Fig 5.

14) Connect the cable to MAIN CONTROL at JP20.
15) If desired, fit a handle on the lamp top.

X-ray apparatus

1) Insert the adapter tube with plastic washer in hole (14)on Fig. 6 and turn the tube clockwise until fastened.
2) Run the cable through the adapter tube and down into the stand.
3) Place the X-ray apparatus on the adapter tube.
4) Connect the X-ray apparatus. Take suitable, extra protective precautions.
5) Stick the supplied adhesive rubber ring on the X-ray apparatus arm to avoid cracked enamel.

2. Installation

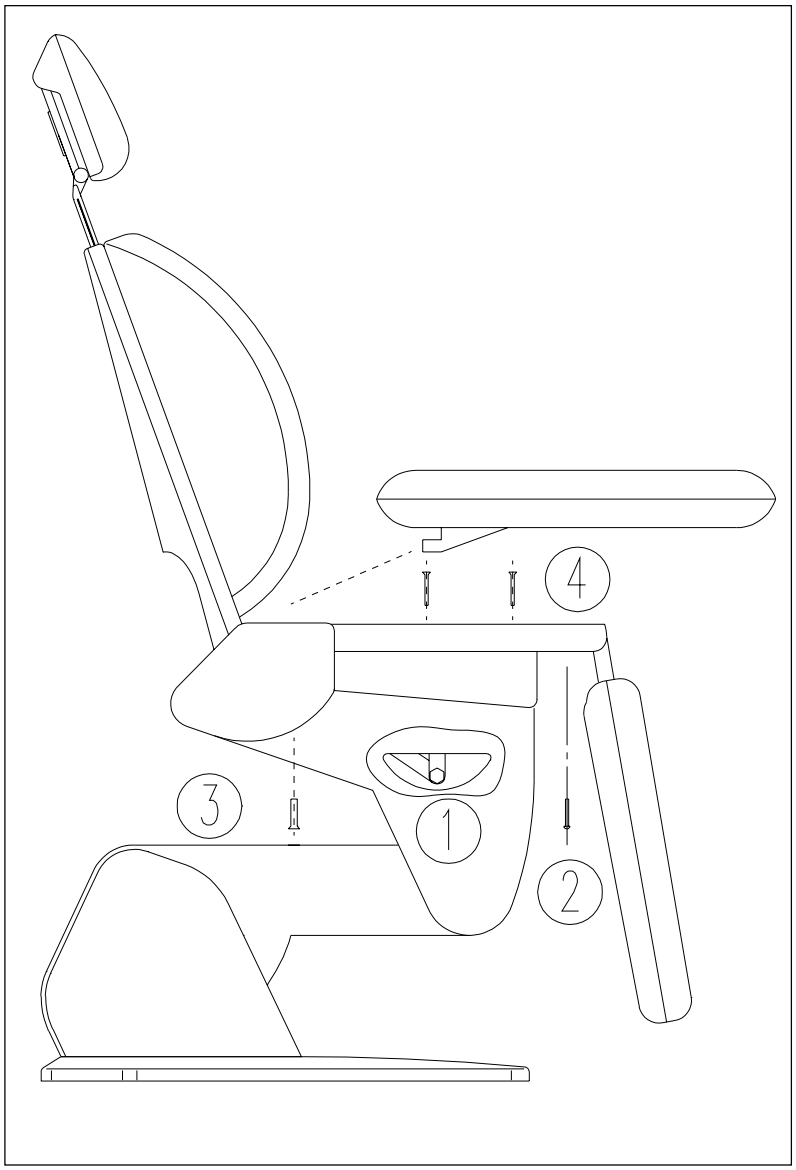


Figure 10. Patient chair.

Call system

1) Plug the call system cable into the socket.

2) Run the cable into the side of the stand facing the patient chair and connect it to the MAIN CONTROL printed circuit board at JP14.

Patient chair II

1) Place the patient chair as shown on the installation plan.
2) The chair is bolted using the supplied bolts.
3) Grease the bearing surface on the bolt before screwing in the legrest lever, see Fig. 10 (1). Tighten the lever.
4) Fit the tube on the connecting piece located at the foot of the stand. Support the tube using the supplied strap.
5) Fasten the cables. (Run the cable under the bearing bar).
6) Connect the 230 VAC cable from the chair to the supplied 3-pin plug (Order of the phase (L-brown), nil (N=blue) and earth wire (yellow/green) must be as marked at JP3 on MAINS CONNECTIONS at the foot of the stand).

7) Fit the socket on MAINS CONNECTIONS at JP3.
8) Connect the communication cable to MAIN CONTROL at JP25.
9) An equipotential cable can be connected to the chair base where the clip is marked.
10) Unscrew the two screws at (Fig. 10 (2)) and remove the seat.
11) Mount the side covers and tighten the screws, see Fig. 10 (3).
12) Mount the soft covers and tighten the screws (three screws for each cover), see Fig. 10 (4).

> Never lift the chair with the side covers mounted.
> When lifting the chair, only hold on to the steel frame.

The cables between unit and patient chair can also be run in a channel under the floor. See the installation plan in chapter 5 for where to place the channel.

Patient chairs of a different make can be supplied with 230 VAC from the MAINS CONNECTIONS printed circuit board at JP3 unless HygiFlex Thermo has been installed in the unit. In this case, the chair must be connected to a separate group on the meter board.

Connections

1) Rinse the water tubes thoroughly and blow air through the air tubes (min. 10 minutes) before switching the unit on.
2) Connect the water tube (green) to the ball tap using the supplied fitting 3/8" and turn the water on.
3) Connect the air tube (blue) to the ball tap using the supplied fitting 3/8" and turn the air on.
4) Connect the unit suction system to the suction installation.

5) Connect the motor cable to the supplied plug and to MAIN CONTROL at JP13.
6) Connect the waste hose to the drain.
7) Connect the unit to the mains.
   * If the unit has a boiler, pull JP1 out of MAIN CONTROL.
   * If MAINS CONNECTIONS has a voltage selector, check to see if it has been set correctly.

2. Installation

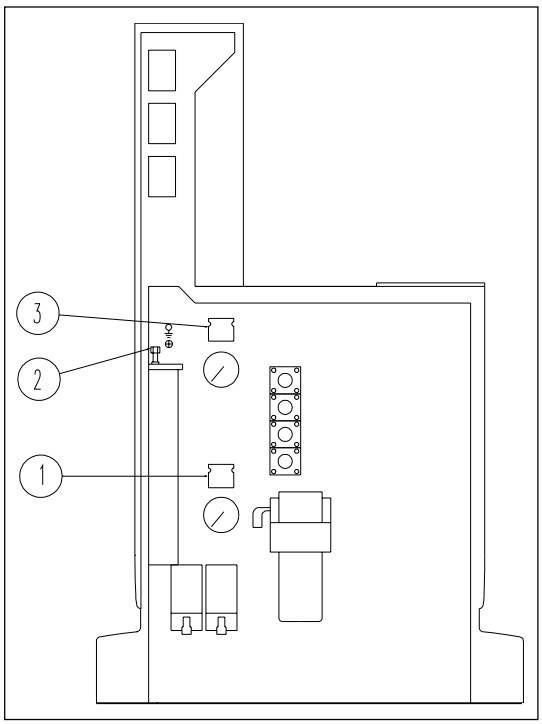


Figure 11. Open unit, seen from mechanical side.

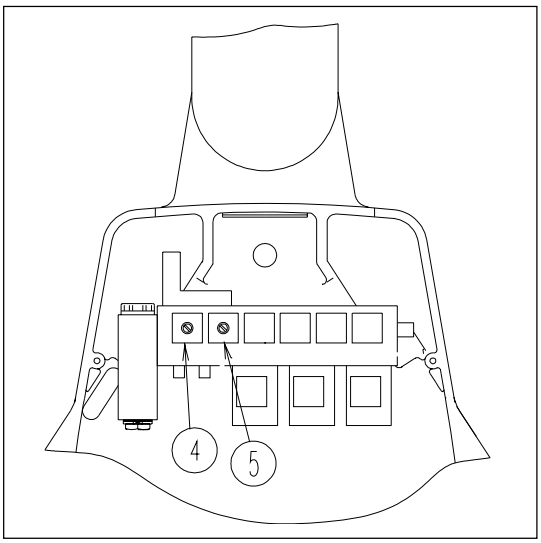


Figure 12. Bridge without cover.

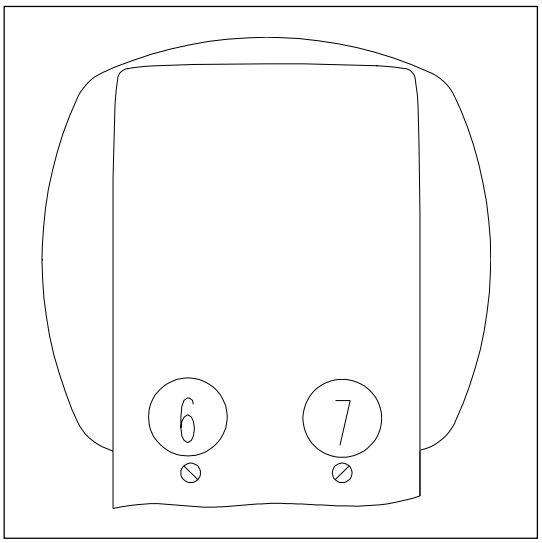


Figure 13. Underside of cuspidor.

* Connect the mains voltage to the plug marked 230 VAC IN (JP7) on the MAINS CONNECTIONS printed circuit board.

8) An equipotential cable can be connected to the unit stand where the clip is marked.

Adjustments

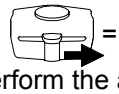
For further adjustments, see TECHNICAL SERVICE.

1) Switch the unit on.
2) Pull the button (1) on Fig. 11 up and set the water pressure at 0.5 bar.

3) If the unit has a boiler, release air through valve (2) on Fig. 11. JP1 can now be connected to MAIN CONTROL again.
4) Activate the syringe with water until all air has been released.
5) **Only BC unit with software 4.0 onwards:**
   Draw the suspensions forward one by one and press the p-button twice each time to programme the position of the instrument and then put the instrument back in place.
   Only BC unit with software until 4.0:
   The instrument position is defined using the dip-switches. See the plan in chapter 5.
6) Activate the instrument suspension at the far right-hand side with water to release the remaining air bubbles.
7) Then set the air pressure at 2 bar (while the syringe is activated) and press button (1) on Fig. 11 home.
8) Pull the button (3) on Fig. 11 up. Set the air pressure at 5.5 bar and press the button home again.
9) When required: Lift the instrument suspensions and remove the bridge cover to adjust the syringe water flow using needle valve (4) and the air flow using needle valve (5), see Fig. 12.
10) Place cuspidor and cup filler bowl.
11) Adjust the cup filler at screw (6) under the cuspidor (see Fig. 13) till an activation fills the supplied reference cup to the mark.
12) The cuspidor flush water flow can be adjusted by screwing (7), see Fig. 13.
13) Mount the 2 suction tubes (the big tube at the outer holder).
14) **Only FC unit with software 5.10 and upwards:**
    Adjust turbine after rotation by taking the turbine off the suspension. Press the P-button twice.

    Activate the foot control disk downwards 

    Adjust drive air with the foot control pedal

     = 1 step down  = 1 step up till the burr only just stops rotating.

    It is only necessary to perform the adjustment on one suspension.
    Only NTC unit:
    Adjust turbine after rotation by pressing the P-button twice. Select C2 to adjust till the burr only just stops rotating.
15) **Only for screen with backlight:**
    When necessary, adjust contrast and light at the bottom rear of the screen with the trimming pins or a 2 mm Allen key.

Dipswitches

See adjusting possibilities in the dipswitch diagram in chapter 5.
Ask the dentist what he wants and programme according to his requests.

3. Routine checks

- ☐ Does the unit beep 3 times when switched on?
- ☐ Does the NTC screen function (when mounted)?
- ☐ Is the air pressure set at 5.5 bar?
- ☐ Is the water pressure set at 2 bar when the syringe is activated?
- ☐ Is the motor cooling air adjusted correctly?
- ☐ Is the turbine driving air adjusted correctly?
- ☐ Is the reference cup filled to the mark when the cup filler is activated once?
- ☐ Does the assistant call function? (Can you hear the relay react when the foot control is activated)?
- ☐ Does the cuspidor control function?
- ☐ Does the cup filler control function?
- ☐ Does the surgery lamp control function?
- ☐ Does the chair control function?
- ☐ Does the suction function?
- ☐ Does the separation automate/amalgam separator function normally when sucking water from a bucket?
- ☐ Is the drain pump (when mounted) activated when the suction is taken from the suspension?
- ☐ Is the amalgam separator (when mounted) activated when the suction is taken from the suspension?
- ☐ Does the HygiFlex Vac/Ultra control work (when mounted)?
- ☐ Does the HygiFlex Thermo/Rinse control work (when mounted)?
- ☐ Test the syringe and all instruments. Is the dentist satisfied with the settings?
- ☐ Is the arm adjusted correctly (also with a hand instrument table or surgery plant)?

4. Finally

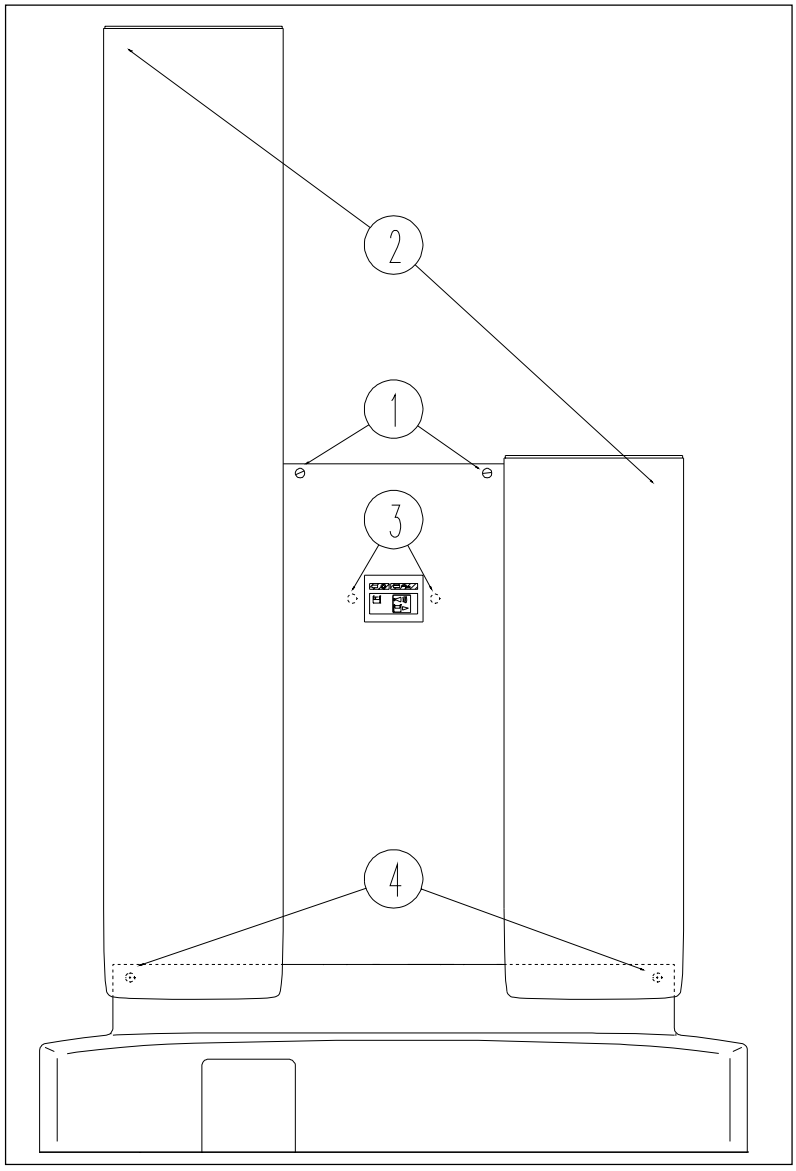


Figure 14. Final installation of the equipment.

4. Finally

See Figure 14.

1) Place the foot cover on the side of the unit opposite the patient chair.
2) Screw in the 2 Phillips screws (4) without tightening too hard.
3) Push the foot cover upwards until it touches.
4) Tighten the 2 Phillips screws.
5) Place the opposite foot cover and screw it on at the same height.
6) Hold one stand cover vertical so the 2 dowels on the foot of the cover are gripped correctly.
7) The stand cover is pressed against the foot cover.
8) Fasten the amalgam separator display by screwing in the 2 finger screws (3).
9) The stand cover is carefully tilted in place at the top.
10) Fasten the 2 lock screws (1) using a coin.
11) Mount the other cover following the same procedure.
12) Cover any holes at the top of the stand that are not used with the supplied cover plugs.
13) Polish the enamel surfaces using Flex Make Up (YR-001).

Instruct the dental staff on operation and maintenance of the equipment.

Before leaving the clinic remember to make an entry in the logbook.

5. Installation plans and additions